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ABSTRACT

This document presents information about some of the more common insects affecting vegetables in the home garden. Specific control recommendations are not included in this publication. Ways to recognize the different insects in their various growth stages are discussed. (CS)

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Pests of the Home Vegetable Garden

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PESTS OF THE HOME VEGETABLE GARDEN

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PESTS OF THE HOME VEGETABLE GARDEN

A. Introduction

Growing a home vegetable garden without a considerable number of insect problems is not likely. Unsightly wormy vegetables are no more acceptable from the home garden than from a commercial vegetable producer. Not only are the wormy products unsightly, they are often unappetizing and trimming the waste increases the cost of such a venture.

Insects can damage vegetables from the time seeds are planted until after the vegetables have been harvested.

Insects feeding on vegetables can be divided into two groups: chewing, and piercing-sucking. The chewing insects, using their mouth parts, damage or destroy plants by eating all or part of the leaves, stems, fruit, or roots. The aphid is a good example of the piercing-sucking insects. They insert their slender stylets into plant tissue and suck out plant juices.

In order to successfully control insects on vegetables, one should recognize the different insects in their various growth stages and how they cause damage.

Some of the most common insects affecting vegetables are presented in this bulletin. Beneficial insects are also found on vegetables, but seldom are present in sufficient numbers to keep the destructive forms from causing damage.

Specific control recommendations are not included in this publication. For control recommendations refer to the bulletin Vegetable Garden Insect Control, #539R.

B. Insect Pests

1. Piercing and Sucking Insects

a. Aphids

Aphids (several species), either singly or in clusters, feed on stems or on the underside of leaves of many common vegetable plants. All aphids have piercing-sucking mouth parts and their food consists of plant juices which they draw from the plants with their tiny needle like stylets. They produce a substance called honey dew that dries on the

leaves of affected plants and gives them a shiny appearance. In feeding, aphids weaken plants and may transmit plant diseases.

Aphids spend the winter either as eggs or as adults. Overwintering eggs hatch into tiny aphids in the spring. In a few weeks, the aphids are mature and give birth, without mating, to living young. Some of the mature aphids fly to vegetable crops during the spring and summer and start new colonies. Only females are produced during the summer. This fact, together with their rapid rate of growth and reproduction, makes it possible for enormous numbers to develop in a short time.

As cool weather approaches in the fall, both males and females are produced, and the females of this generation lay fertile eggs which go through the winter.

b. Potato Psyllid

The adults and nymphs feed by sucking the plant juices. The feeding is especially serious because it brings about an abnormal condition of curled yellow leaves known as "psyllid yellows", but which is more commonly called "purple top". Symptoms on potatoes and tomatoes are quite similar. The first abnormal condition noticed is a slight yellowing along the midribs and the edges of the top leaves. The basal portions of these same leaves show a tendency to curl upward. As the condition progresses, the entire tip changes to a yellowish-green, growth is checked and the leaves remain small and narrow and stand upright, giving the top of the plant a feathery appearance. In the case of tomato plants and certain varieties of potatoes the leaf veins become purplish in color.

When the attack comes early in the development of the tomato plant, dwarfing may be so severe that little or no fruit is set. Late attacks may cause an abnormal number of small fruit. Attacks on potatoes before tubers set may cause the formation of numerous small tubers.

The adult psyllid is often called the jumping plant louse, and resembles a tiny cicada about 1/10 inch long, with four membranous wings held roof-like over the body. The adults are often difficult to find in the garden except by the use of an insect net. The adult psyllids pass the winter in Arizona, Texas, and New Mexico. Northward migrations of the adults occur in spring as the season advances. They appear in Wyoming on certain wild host plants about mid May. Psyllid migration from wild host plants to the garden may take place anytime during the season. The eggs are light yellow, spindle-shaped and each one is suspended from the leaves on a short stalk slightly larger than

the egg. These hatch in about 7 days. The newly hatched nymph is yellowish in color and becomes greener as it develops. The nymph is flat and scale-like in appearance. The newly hatched nymph is difficult to see without magnification, but mature nymphs are plainly visible. They are usually more numerous on the underside of the leaves but may also be found on the top surface. The nymphal stage usually lasts from 14-22 days before transforming to adults.

There may be 4 to 7 generations per season with much overlapping of the broods so that all stages are present in the garden after the infestation is well under way.

Usually the damage has been done by the time the gardener discovers psyllids on potatoes and tomatoes. Since psyllid infestation cannot be accurately predicted, consider treating the potatoes and tomatoes about every 10 to 14 days. Start when the potato vines are 4 to 6 inches tall and tomatoes just as they are transplanted. Apply four to five additional treatments to both potatoes and tomatoes.

c. Beet Root Aphid

In some years the sugarbeet root aphid has been a pest of table beets. The pale yellowish aphid surrounded by a white moldlike substance is found on the roots. The life history is similar to that described under aphids in this publication. During the fall, the females lay overwintering eggs on cottonwood and poplar trees. They also pass the winter as adults on roots of beets, lettuce, dock, and lambsquarter. Excess moisture is unfavorable to the root aphid and where irrigation is possible, injury to the plant can be prevented.

2. Chewing Insects

a. Blister Beetles

Blister beetles are chewing insects particularly fond of foliage of potatoes, tomatoes, beets, beans, cabbage, corn, peas, and onions. At times the beetles appear in swarms and rapidly devour the foliage. Blister beetles are slender, cylindrical, 1/2 to 1 inch long with relatively soft bodies. The head of the beetles is noticeably separated from the rest of the body and the tip of the abdomen is always extended. The black blister beetles are the most common. Although they have wings they fly poorly.

The blister beetles overwinter as grubs in the soil, and emerge to feed and lay eggs. The larval stages of some are beneficial, since they feed on grasshopper eggs.

b. Cabbage Worms

Cabbage and other vegetable crops, such as lettuce, cauliflower, kohlrabi, broccoli, Brussels sprouts, turnips, radishes, and kale are particularly susceptible to damage by the cabbage looper and the imported cabbageworm, sometimes called the common cabbageworm.

The cabbage looper is a smooth green worm, lightly striped along its back and sides. It travels with a looping motion and sometimes is called a measuring or inch worm. The full-grown looper is about 1 1/2 inches long and has a distinctly tapered body.

The cabbageworm is a sluggish velvety dark green worm 1 1/4 inches long when full grown.

The cabbageworms may be so abundant that considerable persistence is required to control them. They are capable of completely defoliating plants if they are allowed to become abundant. They eat their way into cabbage heads from near the base of the plant. Early treatment is necessary to achieve the desired control before they are out of reach of ordinary applications of insecticides.

The cabbage looper overwinters in the pupal stage in a silken cocoon on old cabbage stalks or on the ground beneath the old plant. In the spring a dark brown moth with a wingspread of 1 1/4 inches emerges from the cocoon. The moth is active at night. The eggs, which are laid on the underside of the leaves, are pale yellow to white, rounded and marked with a series of ridges. The young loopers hatch in about 10 days and become full-grown 2 weeks to a month after hatching. Three or more generations are produced each season.

The cabbageworm hibernates as a pale-green to greenish-brown chrysalis attached by a few strands of silk to sheltered locations near the old cabbage plants. A white butterfly marked with black emerges from the chrysalis the following spring. The butterfly, which has a wingspread of approximately 1 3/4 inches, flies over the plants during the day and lights occasionally to deposit elongate yellow eggs on the underside of the leaves. The insects hatching from these eggs become full-grown in 10-14 days. There are 2-3 generations each season.

c. Colorado Potato Beetle

The adult of the Colorado potato beetle is oval, hard-shelled, about 3/8 inch long, with black spots on each side of the body. Both the adult and larva feed on potatoes, tomatoes, eggplants, peppers, cabbage and related weeds.

The adults emerge from the soil in the spring and begin to feed. The bright orange-colored eggs are laid on end in clusters on the underside of leaves. The bright red larvae hatch in about a week and begin to work on the foliage. Pupation occurs in the soil and a second generation emerges in 5 to 10 days.

d. Cutworms

The adult stage of the cutworms is moths, sometimes called "millers" which are active at night. The cutworm or larval state is a dull-colored, plump bodied caterpillar that spends the daylight hours hiding under dirt and trash. The full-grown larvae are 1 to 1 1/2 inches long.

Cutworms feed on most plants and, as a rule, destroy more of a plant than they eat, they may attack nearly all garden plants. They start feeding in the spring so the gardener must keep a close watch over new transplants. Young plants are usually cut off at or near the soil line.

Most cutworms spend the winter in the larval stage hidden in the soil. In the spring the larvae start to feed again and complete their growth in early summer. Pupation takes place in the soil, and in early summer, the moths appear, many of them making their presence known when attracted to house lights. The eggs of most kinds of cutworm moths are laid on the stems of grass and weeds or sometimes on the ground. The egg stage lasts from 2 days to 2 weeks. Usually there is but one generation per year for most cutworms.

e. Flea Beetles

Flea beetles eat small holes in leaves of potatoes, radishes, turnips, beets, tomatoes, and many other plants in the vegetable garden. There are several species of these minute insects. The beetles are about 1/10 of an inch in length, oval, usually shiny black or bronzed in color, sometimes ornamented with broad stripes along the back. They posses enormously developed thighs on the hind legs, by which they are able to jump with great agility, and hence have acquired the name - flea beetle.

The larvae feed for the most part on roots of garden vegetables as well as on weeds. This injury is usually not noticed until it is too late to apply control measures.

Most flea beetles spend the winter as adults in the soil or under rubbish. They come out from their cover early in the spring, and eggs are deposited in the soil around the plants upon which the adult feeds. The flea beetle larvae develop on the underground parts of the plant near where they hatch. One or two generations are produced each season.

Adult feeding does not usually damage large plants but small plants may be severely damaged. Feeding mars the appearance of greens, making them undesirable to many people.

The tuber flea beetle larva scars the surface of potato tubers or bores into them and causes discoloration, resulting in discoloration when the potatoes are pared.

f. Grasshoppers

Grasshoppers are so familiar to everyone that it is hardly necessary to give a description. Grasshoppers develop in fields, pastures, and wasteland. From these areas they move into lush green gardens. It is difficult to protect a garden surrounded by areas heavily infested with grasshoppers.

Grasshoppers affecting the vegetable garden vary considerably in size and color. The common species overwinter in the egg stage in soil. The eggs are deposited in clusters, usually on pasture land, wasteland or adjoining uncultivated areas. The young hatch in the spring during late May and June and reach full growth by summer (July, August, and September).

g. Hornworms

The hornworms sometimes grow to a length of 4 inches and a thickness of 9/16 of an inch or the size of a man's finger. It is one of the largest worms found on ornamental plants. They are called hornworms because of a large backward projecting spine that is usually present on the back near the posterior end of the abdomen. The larvae vary in color but most species are green and blend well with the leaves of their host. The larvae feed ravenously for 3 to 4 weeks and often completely defoliate a plant. The larvae, when full grown, dig into the soil 3 to 4 inches, where pupation takes place. In Wyoming the winter is probably spent in the pupal stage. The moths emerge in late May and June, mate, and within a few days start depositing the greenish-yellow eggs. The adult of the hornworm is a beautiful moth sometimes known as hummingbird, sphinx, or hawk moth The moths do not injure the plants but fly at dusk and hover about beds of flowers, particularly petunias, sucking the nectar with their long tongues.

h. Maggots

The cabbage maggot attacks the roots of cabbage, radish, turnips, cauliflower, and related plants. It is a white soft-bodied, footless larva. The full-grown maggot is about 1/3 inch long. The adults are two winged flies smaller than the ordinary house fly. The maggots make slimy tunnels in the roots, and the most severe injury usually occurs during the early spring when the weather is cool and the soil is moist. One of the first signs of injury is the wilting of the plants during the heat of the day.

This insect overwinters as a pupa in the soil at a depth of 1 to 5 inches, enclosed in a brown pupal case about the shape and size of a grain of wheat. The fly emerges from this case in the spring. Small oval white eggs are deposited at the base of the plant or in the soil nearby. The white tapered maggots that hatch from these eggs burrow into the roots, with development continuing for 20 to 30 days. The full grown larvae then form their reddish brown pupae in the soil nearby and from there a second brood of flies soon emerges. The onion maggot has a similar appearance and life history.

1. Mexican Bean Beetle

Mexican bean beetle adults are copper colored, with 16 small black spots on the back or wing covers. They are about 1/4 inch long and greatly resemble the beneficial lady beetles, to which they are closely related. The larvae are spinose, and are lemon to orange colored. Both larvae and adults feed on the underside of the leaves of snap and lima beans, causing them to appear lace-like in appearance. As a rule the pods are not attacked, though they may be eaten when the infestation is heavy.

The Mexican bean beetle spends the winter in the adult stage under trash and in other dry protected areas. It emerges in the spring and begins feeding on beans or other food plants. Its pale orange eggs are laid on the underside of the leaves in much the same manner as the Colorado potato beetles lay their eggs. The young feed for about 20 days, then pupate on the underside of the leaf. After about a week spent in the pupal stage, the insect transforms to the adult. There may be two generations per season.

C. Other Pests

1. Garden Slug

Garden slugs cause problems throughout the United States, by damaging plantings in vegetable gardens and ornamental greenhouses. In greenhouses, slugs assault the young seedlings and the more succulent parts of plants. They annoy home owners through their presence in cellars, around foundations, on walks and in window wells.

Common slugs found in the vegetable gardens are small, soft-bodied, grayish or mottled, slimy creatures averaging about 3/4 inch in length, rarely more than 1 1/2 inches.

Slugs feed on molds, decaying organic matter and on the foliage of plants. They must have a large amount of moisture to survive. Mainly nocturnal, and preferring darkness, they come out of their hiding places to feed in the evening or on dark days.

Favorite hiding places are under old decaying boards and logs, in rock piles and beneath any damp refuse such as leaves and material under plants. Window wells and damp basements harbor many of these pests.

Slugs leave a silver-colored, slimy trail wherever they travel. These trails can be seen on foundation walls, basement floors, walks and plant leaves.

Slugs are controlled by eliminating their preferred hiding places. Remove rotting boards and debris left on the ground or stored in the basement. Keep crawl space under the house free of trash. In greenhouses, many slugs will hide under rotting boards, flower pots and debris beneath benches.

Metaldehyde bait is the preferred material for controlling slugs. Most garden supply centers have a slug and snail bait containing metaldehyde. Apply according to directions on the label of the container. Apply to the soil surface around plants, but do not apply bait to edible plant parts.

Slugs become paralyzed and usually die when exposed to the sun. However, on cool, moist days some may recover, necessitating repeated application.

Since slugs are nocturnal in their habits, apply bait late in the afternoon or at night. Apply it when the ground is moist or wet as the pests are more active on the soil surface then. If possible, do not use the bait just before rain as effectiveness may be reduced.

Slugs may feed intermittently rather than every day. For these reasons, distribute fresh bait at intervals of 7 to 10 days.